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November, 1960

Bibliography of Selected
Literature on Apple Marketing
1945-1960

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C & R-PREP.

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Preface

This is the first step in a study to summarize, analyze, and evaluate past findings from apple marketing research so that it will be clearer to those planning future marketing studies.

This report does not attempt to summarize or evaluate research results; it is a listing of past research that has been reported. The annotations consist of brief statements about the topics or subject matter covered, and are included only when the title does not convey this. The bibliography is primarily for the use of USDA researchers in their studies of apple marketing.

This bibliography has been developed from four primary sources. Apple Marketing Bibliography, by C. B. Anslinger* was culled for references prior to 1952, while Apple Handling and Storing Since 1940, a Selected List of References, by E. G. Davis and N. G. Larson** yielded references prior to 1953. The Agricultural Index and the Bibliography of Agriculture were consulted for the entire 16-year period.

References in this listing are generally limited to those reporting results of research about marketing fresh apples. Reports by USDA and State Experiment Station workers comprise most of the listing. However, reports of some private research groups are also presented. Periodical literature and some foreign publications giving research results are also included.

References have been listed chronologically by years and alphabetically by author within each year. Call numbers given are those of the USDA Library. For literature not in the USDA Library source of origin is given.

* Univ. Md., unpublished mimeo., Dec. 1951.

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1945-1960

by
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Total margin including grower's return, shipping-point margin, transportation costs, wholesaling and retailing margins.

98. REIZENSTEIN, H. H., and BITTING, H. W.
Marketing margins for Washington Delicious apples sold in Chicago, 1947-48. USDA-*BAE, Marketing and Transportation Situation, MTS-75, pp. 6-11, mimeo. Aug.
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Includes shipping point margin, transportation costs, auction market costs, wholesaling and retailing margins. and the total margin from grower to consumer.

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Fruit farms analyzed; apple varieties, seasonal prices, costs; 54 farms in Ulster and Orange Counties; 69 farms in Niagara County, N. Y. N. Y. (Cornell) Agr. Expt. Sta., A.E. 702, 27 pp., mimeo. June
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Investigation of apple bruising, Wenatchee, Washington, 1948-1949. U. S. Bur. Plant Indus., Soils, and Agr. Eng. H.T.&S. Office Rpt. 211, 8 pp. mimeo. July
1.9 P 772 Ht.
Apple bruising during picking; during handling and hauling, during storage of loose fruit, and in cleaning and grading of fruit.

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Decay resulting from apple handling. Amer. Pomol. Soc. Proc. 63,
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81 AM 33

103. SMOCK, R. M., and MATTUS, G. E.
Does climate affect the storage life of apples? N. Y. (Cornell)
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The metabolism of the apple during storage. Austral. J. Sci.
Res., Ser. B., Biol. Sci. 2, pp. 138-153, printed. May
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105. VAN WAES, D. A.
Bruising of McIntosh apples and its effects on sales. N. Y.
(Cornell) Agr. Expt. Sta., A.E. 704, 18 pp. mimeo. June
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apples occurs in the marketing channel and the effects of
bruising and price on the volume of McIntosh apples sold
at retail.

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Problems relating to the removal of DDT spray residue from
apples. USDA J. Agr. Res. 78 (10), pp. 383-387, printed. May
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Effects of certain stickers and spreaders on DDT residue
and effects of overhead sprinkling and washing on removal
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Causes of bruises in packing apples. Wash. State Apple Com-
mission Res. Dept. 1949 Report, 12 pp., mimeo.
280.393 W 273

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Quality of Maine McIntosh apples from orchards to the con-
sumers. Maine Agr. Expt. Sta. B. 478, 36 pp, printed. Dec.
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Quality considerations in harvesting, hauling, storing,
grading, and marketing Maine apples.

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B716, 23 pp., printed. May.
100 C12S
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110. ANDERSON, D.
Marketing the '49 apple crop. Purdue U. Agr. Ext., Econ.
and Mktg. Inform. Ind. Farmers, 1950, pp. 4,5,7, printed. July
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Distribution of 1949 Indiana apple crop including
prices received.

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Influence of bruising on the sale of apples. N.Y. State
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95.8 G762
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atmosphere storage on the storage life of Delicious
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113. CARLSEN, E.W.
How marketing costs are being reduced and better quality
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Injury to McIntosh apples by mechanical sizers. N.Y.
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The cause and extent of damage to apples in Missouri.
U. Missouri M.S. Thesis, U. Missouri Library.

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Air Purification in apple and pear storages. Refrig.
Engin. 58, pp. 145-148, 192-194, printed. Feb.
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of apples and pears.

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June.
100 Oh3S
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the retail level and effect of type of container on
bruising.

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Effects of ethylene upon respiratory activity of apples
in gas storage, with special reference to stage of
maturity. J. Hort. Sci. 26, pp. 1-7, printed. Dec.
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120. HALLER, M.H., and SMITH E.
Evaluation of indexes of maturity for apples. USDA Tech.
B. 1003, 53 pp., printed.
1 AG84Te
Relationship of maturity of apples and storage quality.

121. HILL, H., and OTHERS.
The relation of foliage analysis to keeping quality of
McIntosh and Spy varieties of apples. Scientific Agr.
30 (12), pp. 518-534, printed. Dec.
7 SCi2
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Brown rot of apples; fungicide trials and studies of the
relative importance of different wound-agents. J. Hort.
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Retail prices of Washington apples compared with prices
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100 OH3S

125. SCOTT, R.C.
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100 OH3S
Bruising of apples during harvesting, grading, packing and distribution.

126. SCOTT, R.C.
Marketing apples in the Canton-Youngstown area of Ohio, 1949-50 marketing season. Ohio Agr. Expt. Sta., D.A.E. Mimeo. B. 218, 20 pp. Aug.
100 OH3S
Apples offered to consumers, including varieties and quality, effect of bruising on retail price, margins taken by retailers, merchandising practices used, and preferences expressed by retailers.

127. SCOVILLE, G.P.
Fruit farms analyzed, 1948, Hudson Valley and Western New York. N.Y. (Cornell) Agr. Expt. Sta., A.E. 749, 19 pp. Mimeo. June
281.9 C81
Apples yields, varieties, prices, costs, and net returns and profit per bushel.

128. SLATER, L.E.
Apple handling and merchandising in retail stores. N.Y. (Cornell) Agr. Expt. Sta., A.E. 733, 35 pp., mimeo. Aug.
281.9 C81

129. SMITH, E., and OTHERS.
Briusing of Pacific Northwest apples during shipment and market distribution. USDA - Bur. Plant Indus., Soils, and Agr. Engin., H.T. & S. Off. Rpt. 229, 9pp. mimeo. June 1.9 P772Ht
McCOMBS, C.L. WRIGHT, T.R., REURELT, V.A. and RADSPINNER, W.A., joint authors.
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1950 continued

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The storage of apples. N.Y. (Cornell) Agr. Ext. B440,
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275.29 N48E

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of apples, and storage troubles and diseases of
apples.

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Do apples keep better with air purification? Amer.
Fruit Grower 70 (7), pp. 18, 24-25, printed. July
80 G85W

132. VAN DOREN, A., and BULLOCK, R.M.

Air purification studies in Pacific Northwest refrigerated
storage rooms. Amer. Soc. Hort. Sci. Proc. 55, pp. 239-246
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133. VAN DOREN, A. and SKODVIN, R.H.

A study of the hours delay between time of picking and
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Delicious apples. Amer. Soc. Hort. Sci. Proc. 55, pp.
233-235, printed. June
81 S012

134. -----

Consumer preferences regarding apples and winter pears
USDA Agr. Infor. B: 19, 69 pp. printed.
1 Ag84AB

Consumer preferences regarding fresh apples, processed
apple products, and winter pears. Includes how apples
were bought; consumption; prices paid for apples;
apparent influence of price on consumption; how the
homemakers judged apples; color, size, shape, and
general condition as factors in preference; internal
characteristics; and uses of apples.

1951

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A survey of apples in stores. Wisc. Hort. 41, pp. 82-84, printed, Jan.
80 W752

Display methods used, varieties in stores, consumer packages, and retailers' opinions of Minnesota and Wisconsin apples.

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Marketing charges for apples sold in Pittsburgh, December 1949 - May 1950. USDA Agr. Info. B. 47, 27pp., printed. June 1 AG84Ab

Marketing charges made for services performed in marketing apples in Pittsburgh from Dec. 1949 thru May 1950, including grower's return, shipping-point services, transportation, brokerage margin, wholesaler's margin and retailer's margin.

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Merchandising methods influence apple sales. N.Y. (Cornell) Agr. Col. Farm Econ. 182, pp. 4749-4751, printed, Oct. 280.8 C812

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Studies of the response of Golden Delicious and Red Delicious apples to controlled modifications of the storage atmosphere. Wash. State College Thesis, Wash. State College Library.

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Pre-bagged apples: the Washington State Apple Commission sums up a two-year study of costs and efficiencies in pre-packaging. Mod. Packaging 24 (9), pp. 110-113, 188, printed. May.

309.8 M72

Economics of prepackaging, including type of package, master containers, method of filling bags, cost of retailing, and effect on sales.

140. CARLSEN, E.W., and STOKES, D.R

Prepackaging apples at point of production. USDA Agr. Info. B. 29, 52 pp., printed, Jan.
1 AG84Ab

Methods of bagging apples in transparent film bags, methods of weighing, closing, and packing bags into shipping containers, costs of bagging apples as compared with costs of packing in standard boxes, salability of prepackaged and bulk apples, type and size of package preferred by consumers, range of sizes and range of color of apples acceptable to consumers, costs of retailing prepackaged and bulk apples, and marketing costs and trends in prepackaging apples.

1951 Continued

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Scald, firmness, soluble solids and acidity in Rome Beauty apples as affected by time of harvest in three orchards. Amer. Soc. Hort. Sci. Proc. 57, pp. 95-100, printed.
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Cost of marketing West Virginia apples. Mountaineer Grower 21 (185), pp. 27-31, printed. Feb.
80 M86
Marketing costs, including packing, storing, selling, transporting, retailing and wholesaling.

143. FISHER, D.V., and PORRITT, S.W.
Apple harvesting and storage in British Columbia. Dom. of Can. Dept. Agr. P. 724, 47pp., printed, June
7 Cl6Pu
Effects of orchard conditions on the type of fruit produced, effects of harvesting maturity on life of apples, effects of storage procedure on life of apple, and storage disorders of apples.

144. FISHER, D.F., and SMITH, E.
Handling apples from tree to table. USDA C. 659, rev., 43 pp., printed.
1 Ag84C
When to pick apples, when to pack apples, factors affecting storage life, and effects of packaging on quality of apple.

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The influence of certain wax emulsions on the weight loss and respiration rate of Rome Beauty and Golden Delicious apples. Amer. Soc. Hort. Sci. Proc. 58, pp. 99-102, printed, Dec.
81 Sol2

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Factors affecting farm income, farm prices and food consumption. USDA Agr. Econ. Res. 3 (3), pp. 65-82, printed. July.
1 Ec7Agr
Includes factors affecting apple prices.

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Purifying air in storage rooms. Ice and Refrig. 120 (6), pp. 17-26, printed, June.
295.8 1C2
Effects of air purification and its importance in storage of apples.

1951 continued

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A survey of apple cold storage and handling facilities in the Virginia producing areas.
Virginia Polytechnic Institute, M.S. Thesis, V.P.I., Library
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Studies of the organic volatiles affecting the keeping quality of apples in storage. Cornell U. Ph.D. Thesis,
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Apple bruising, No. 1 sales killer. Amer. Fruit Grower 71
(11), pp. 11, 22, printed, Nov.
80 G 85
Apple bruising, its causes and its effect on sales.

151. GASTON, H.P., and LEVIN, J.H.
Grading apples in the orchard. Mich. Agr. Expt. Sta. Q.B.
33 (4), pp. 310-319, printed, May.
100 M58S
Effects of mobile grader on speed and economy of handling apples and on bruising of apples.

152. GASTON, H.P., and LEVIN, J.H.
How to reduce apple bruising. Mich. State Col. Agr. Expt.
Sta. Spec. B. 374, 30pp., printed, Sept.
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153. GIVENS, R.L.
Cold storage of apples in Virginia. Agr. Engin. 32, pp.
161-162,165, printed, March.
58.8 Ag83
Apple storage facilities existing in Va. during 1948.

154. HOOBLER, S.Q.
Certain factors affecting apple prices., Wash. Agr. Expt.
Sta. Cir. 174, 4 pp., Mimeo, Oct.
100 W273
Factors affecting apple prices including consumer
disposable income and national apple production.

155. KELLY, R.A.
Edible apple tissue--proportion, cost, and palatability-- in midwestern retail stores, 1947-1948 and 1948-49. Ill. Agr.
Col. D.A.E. 2801, 63 pp., mimeo, April.
275.29 IL 62P
Proportion of edible and inedible tissue in apples offered for sales in retail stores in the north-central states, amount of inedible portion attributable to each cause, cost of edible part, how this cost compared with cost of the edible tissue of competing fruits, and palatability of apples.

1951 continued

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A study of customers knowledge of certain apple varieties, purchasing habits, uses of apples in the home and related factors, six selected stores, Columbus, Ohio, December 1950 and January 1951. Ohio Agr. Expt. Sta., D.A.E. Mimeo. B. No. 229, 40 pp., Oct.
281.9 Oh32

157. PORRITT, S.W.

The role of ethylene in fruit storage. Agr. Inst. of Canada, Scientific Agr. 31 (3), pp. 99-112, printed, March 7 SCi2

158. RASMUSSEN, M.P.

Some observations on the packaging of apples in consumer units at country points. N.Y. (Cornell) Agr. Expt. Sta., A.E. 777, 15pp., mimeo, May.
281.9 C81

159. REIZENSTEIN, H.H., and BITTING, H.N.

Farm-to-retail margins from Appalachian apples marketed in Pittsburgh, 1949-50 season. USDA Agr. Infor. B. 44, 26pp., printed, April.
1 Ag84Ab

160. ROSE, D.H., McCOLLOCH, L.P., and FISHER, D.F.

Market diseases of fruits and vegetables: apples, pears, quinces. USDA Misc. Pub. 168, rev., 72 pp., mimeo, Nov.
1 Ag84M

Market diseases, their symptoms and control.

161. SCOTT, R.C.

Some problems of the Ohio apple industry from the point of view of the wholesaler. Ohio Agr. Exp. Sta. D.A.E., Mimeo. B. 224, 17 pp., April.

281.9 OH32

Source of apples handled, varieties handled, grade offered, types of containers, containers prefered, attitudes toward handling pre-packaged apples, attitude regarding the enforcement of grades, and problems in handling Ohio apples.

162. SCOVILLE, G.P.

Importance of apple varieties. N.Y. (Cornell) Agr. Col. Farm Econ. 178, pp. 4618-4619, printed, Feb.
280.8 C812

Importance of different apple varieties in New York State.

1951 continued

163. SHERMAN, R.W., SHARP, J.W. and MITCHEL, G.H.
Prepackaging of Ohio apples on the farm and their marketing.
Ohio Agr. Expt. Sta., D.A.E., Mimeo B. 230, 8pp. Nov.
281.9 Oh32
Types of packages used, returns from prepackaged apples,
costs of prepackaging, spoilage of packaged apples, re-
tailer's opinion of prepackaged unit, and consumer ac-
ceptance of farm prepackaged Ohio apples.

164. SMITH, E., and WRIGHT, J.R.
Bruising of Pacific Northwest apples during shipment and
distribution to retail stores in Texas. U.S.Bur. Plant
Indus., Soils, and Agr. Eng., H.T. and S., Off. Rpt. 256,
7pp., mimeo. June.
1.9 P772Ht

165. SMOCK, R.M., and GROSS, C.R.
Respiration and ripening of apples in air purification
studies. Amer. Soc. Hort. Sci. Proc. 57, pp. 81-93,
printed, June.
81 S012

166. STORY, R.P.
The trend in Vermont apple prices and grower marketing costs
for 1947. Vt. Agr. Expt. Sta., Misc. P. 2., 42pp., mimeo. Feb.
100 V59M
Trends in apple prices in Vermont; grades of fruit market-
ed; type of market outlets; grower marketing costs, in-
cluding container costs, grading and packing costs, sell-
ing and handling costs, storage costs, trucking costs, and
processing costs; and factors influencing marketing costs.

167. VAN WAES, D.
Economic significance of bruising on retail sales of McIntosh
apples. Cornell U. Thesis, Cornell U. Library, 207 pp.

168. VAN WAES, D.A.
The effect of bruising on retail sales of apples. N.Y.
(Cornell) Agr. Col. Farm Econ. 179, pp. 4660-4661, printed. Mar.
280.8 C812

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Fruit temperatures in commercial Northwestern apple shipments
protected with automatic alcohol heaters during January and
February 1951. U.S. Bur. Plant Indus., Soils, and Agr. Engin.
H.T. and S. Off. Rpt. 249, 4pp., mimeo, May
1.9 P772Ht

1951 continued

170. ZAHN, G.D.

Marketing Washington apples in Denver-1948-49 season.
Wash. State Agr. Expt. Sta. Cir. 148, 14 pp., mimeo, May.
100 W27S

Includes seasonal purchasing and selling patterns,
loss from spoilage and damage, and size of margins
taken by wholesalers and retailers.

171. ZAHN, G.D.

Study of the marketing margins of Washington apples sold
in Denver, Colorado, Sept. 1948 to Aug. 1949. Wash. State
College Thesis, Wash. State College Library. 89 pp.

1952

172. ARMENTROUT, W.W.

Some customers pay no attention to bruises on apples.
W. Va. Agr. Expt. Sta. B. 357, Pt. 1, p. 7, printed. Sept.
100 W52
Factors affecting consumer choice in apples.

173. BAKER, C.E., and MAXIE, E.C.

An apparent retardation of a physiological spot on Red Rome apples in storage by activated charcoal and shredded oiled paper. Amer. Soc. Hort. Sci. Proc. 59, pp 312-314, printed. 81 S012

174. BOGER, L.L.

When should apples be sold? Mich. State Col. Agr. Expt. Sta. Spec. B. 381, 19 pp., printed. Sept.
100 M58S
Factors to be considered in deciding when to market apples.

175. BRESSLER, R.G.

Efficiency in fruit marketing; marketing costs for deciduous fruits. Calif. Agr. Expt. Sta., Giannini Found. Agr. Econ. Mimeo. Rpt. 127, 15 pp. May
281.9 G34M
Also in: Calif. Agr. 6(6), June 1952, pp. 8-19, 12.
Includes marketing costs and efficiency in marketing apples.

176. BRESSLER, R.G., AND FRENCH, B.C.

Efficiency in fruit marketing; grading costs for apples and pears. Calif. Agr. Expt. Sta., Giannini Found. Agr. Econ. Mimeo. Rpt. 128, 21 pp. June
281.9 G34M
Also in: Calif. Agr. 6 (7), July 1952, pp. 7,8,10.
Grading or sorting operations, grading costs, labor requirements and standards, reducing costs for sorting labor.

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How we increased the retail sales of apples. N. Y. State Hort. Soc. Proc. 52 (Reprint by National Apple Institute) 9 pp., printed.
81 N484

Also in: Mich. State Hort. Soc. Ann. Rpt. 81 (1951), pp. 24-29 and Va. Fruit 40 (2), pp. 18-28.

Effects of merchandising practices in New York on apple sales.

1952 continued

178. CARLSEN, E.W., and HERRICK, J.F.
A portable mechanical lift for high-piling and breaking
out high-piled boxes of apples. USDA - PMA, 10 pp. mimeo.
May.
1.956 M343P83

179. CLARKE, W.S.
A comparison of the storage life of standard varieties of
apples with their red bud sports. Amer. Soc. Hort. Sci.
Proc. 59, pp. 315, 318, printed, June.
81 S012

180. CRAVENS, M. E.
Selling Michigan apples. Mich. State. Col. Agr. Expt.
Sta. Spec. B.382, 30 pp., printed. Oct.
100 M58S
Factors affecting the rate of apple sales

181. DAVIS, L.H.
Applying improved apple merchandising practices in retail
stores. (Cornell) N.Y. Agr. Expt. Sta., AE 807, 13pp. mimeo.
April
281.9 C81

182. DOMINICK, B.A.
Merchandising McIntosh apples under controlled conditions-
customer reaction and effect and sales. Cornell U. Thesis,
Cornell U. Library. 280 pp.

183. FRENCH, B.C.
Efficiency in fruit marketing: Packing costs for California
apples and pears. Calif. Agr. Expt. Sta., Giannini Found.
Agr. Econ. Mimeo. Report 138. 25pp. October
281.9 G34M
Packing equipment, shipping containers, packing opera-
tions, influence of packing labor on plant costs,
packing performance standards and efficiency factors,
factors affecting packing efficiency, packing cost
comparisons, and potential savings.

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Quality in apples as affected by pesticide and fertilizer
sprays. Conn. Pomol. Soc. Proc. 61 (1951), pp. 50-54,
printed.
81 C765

1952 continued

185. GERHARDT, F., and SAINSBURY, G. F.
Soft scald and its control in Delicious Apples. Wash.
State Hort. Assoc. Proc. 48, pp. 97-100, printed. Dec.
81 W273

186. HENDERSON, P. L.
Influence of selected marketing services on apple sales.
Cornell U. Ph. D. Thesis, Cornell U. Library. Sept.

187. HERRICK, J. F.
Handling costs in apples storage. Mktg. Activ. 15 (2),
pp. 13-16, printed. Feb.
1.942 A8M34

188. HERRICK, F. F., HUNTER, L. D., and DUNRDEN, R. S.
The comparative efficiency of current methods and types
of equipment used for receiving field boxes of apples
at storage houses in the Pacific Northwest area. USDA-
PMA, 17 pp., printed. Jan.
1.956 M34C733

189. JOINT VIRGINIA COMMITTEE
Sell your apples. V.P.I. Agr. Ext. Serv. B. 199, 23 pp.,
printed.
275.29 V81B
Apple production in Virginia with recommendations for
growers concerning harvest, grading, packaging, in-
spection, cold storage, equipment, and market informa-
tion.

190. JONES, G. G., and SMOCK, R. M.
Hydrocooling apples. N. Y. (Cornell) Agr. Col. Farm. Res.
19 (3), p. 12, printed. July.
100 N48A

191. NORTH-CENTRAL REGIONAL FRUIT AND VEGETABLE TECHNICAL COMMITTEE
Studies in Midwest apple marketing. Mich. State Col. Agr.
Expt. Sta. Spec. B.378, 75 pp., printed. June.
100 M58S
Retail merchandising of apples, quality of apples
found in retail stores, and marketing margins for
apples.

192. PHILLIPS, W. R., and POAPST, P. A.
Storage of apples. Dom. of Can. Dept. Agr. P. 776 Rev.,
43 pp., printed. July.
7 C16Pu
The function of refrigeration, heat calculations, heat
leakage, cooling equipment, control devices, precooling,
storage management, storage conditions, storage disorders,
CA storage and its advantages, operation of gas storage,
and storage notes on different varieties.

1952 continued

193. POAPST, P.A., and PHILLIPS, W.R.
Air purification and soluble pectin accumulations in Law-fam apples (in storage). Scientific Agr. 32 (2) pp. 109-113, printed. Feb.
7 SC12

194. RASMUSSEN, M.P.
Packaging apples in consumer units at country points, 1950-1951 season (a progress report) N.Y. (Cornell) Agr. Expt. Sta., A.E. 836, 13 pp., mimeo. Aug.
281.9 C81
Proportion of total apple production packed in consumer units, varieties packed, types and cost of containers used, grade and size standards followed, comparative prices obtained, market outlets used, and relative size of markets in which consumer units are sold.

195. SAMMET, L.L., and DAVIS, I.F.
Efficiency in fruit marketing: building and equipment costs, apple and pear packing. Calif. Agr. Expt. Sta., Giannini Found. Agr. Econ. Mimeo. Rpt. 141, 38pp. Dec.
281.9 G34M
Plant costs, packing house operations, equipment replacement costs, building replacement costs, and fixed costs for building and equipment.

196. SCHUBERT, O.E.
Chemical sprays can improve apples color. W. Va. Agr. Expt. Sta. B.349, pt. 3, p.5, printed.
100 W52

197. SCOVILLE, G.P.
Experiences of Hudson Valley farmers in the marketing of their apples. N.Y. (Cornell) Agr. Expt. Sta., A.E. 815 77 pp., mimeo. Dec.
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100 N48C

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81 Oh3

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100 S08

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Michigan apple storage facilities. Mich. Agr. Expt. Sta. Q.B. 36 (4), pp. 408-414, printed. May.

100 M 58S

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100 M58S

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Right sprays give a better flavored apple. Conn. Agr. Expt. Sta., Frontiers of Plant Sci. 7 (1), p. 2, printed. Nov.
100 F92

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Film liners for boxes of pears and apples. Pre-Pack Age 7 (5), pp. 14-17, printed.
280.38 P91
Effect of film liners on moisture loss during storage.

248. HALLER, M.H.
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81 S012

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1 Ag84Mr
DUERDEN, R.S., KAFER, F., and HERRICK, J.F., Joint authors.
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Effects of methods of packaging apples on returns to Pennsylvania growers, 1953. Penn. Agr. Expt. Sta. Journal 1938. 62pp. mimeo.
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Air filtration studies in a commercial type apple storage. Amer. Soc. Hort. Sci. Proc. 64, pp. 235-247, printed.
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100 M285
Effects of merchandising practices on apple sales and on bruising.

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Grading and packing apples in Vermont. Vt. Agr. Expt. Sta. Misc. P.4, 29pp. mimeo, April
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Discussion of how apples are graded and packed by different producers, including variation in costs and variation in quality.

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A marketing innovation, prepackaging of fresh fruits and vegetables with special reference to the Ohio apple industry. Ohio State U. Ph.D. Thesis, Ohio State U. Library.

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Marketing apples prepackaged at the shipping point. Mich. State Col. Agr. Ext. B. 329, 19 pp., printed. Sept. 275.29 M58B
Discussion of prepackaging Michigan apples, including varieties, grades, and sizes of apples prepackaged; kind of packages used; buyers of apples; and advantages and disadvantages of prepacking.

259. PADFIELD, C.A.S.
The storage of apples and pears. New Zeal. Dept. Sci. and Indus. Res. B.111, 95pp., printed. 330.9 N48B
Problems of apple and pear storage in New Zealand.

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Air leakage in controlled-atmosphere storage. Agr. Engin. 35, pp. 635, 637, printed. Sept. 58.8 Ag83
Movement of air through small leaks in controlled atmosphere storage rooms, the effect of this leakage in terms of added oxygen, and a method of reducing the influx of oxygen.

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Factors affecting prices of apples. Agr. Econ. Res. 6 (3), pp. 77-84, printed, July. 1 EC7Agr.

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Packaging consumer units of apples at country points, 1952-53 season (a progress report). N.Y.(Cornell) Agr. Expt. Sta., A.E. 944, 18 pp., mimeo. Apr. 281.9 C81
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Apple yields in New York Apple--producing areas. N.Y. (Cornell) Agr. Col. Farm Econ. 197, pp. 5206-5211, printed. Oct. 280.8 C812

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Changing importance of apple varieties. N.Y. (Cornell)
Agr. Col. Farm Econ. 194, pp. 5107-5110, printed. Mar.
280.8 C812

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Consumer expenditure patterns for apples in 1952. Mich.
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Pre-Pack-Age 7 (12), Aug. 1954, pp. 13,15-22
Frog. Grocer '33, Jan 1954, pp. 92-93:
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of packages, and rate of sale.

267. SNITZLER, J.R.
Transportation of apples in the Appalachian Belt, 1952-53.
U. S. Agr. Mktg. Serv., 46 pp. mimeo, Aug.
A280.393 M343T
Volume of apples hauled to market by rail and by truck,
the chief advantages or disadvantages in shipping by
truck rather than by rail, the nature and extent of
truck organization and operation, evaluation of back-
haul traffic as a factor affecting the level of truck
rates, the nature and extent of, and charges for, re-
frigeration service for apples trucked to market, and
a comparison of charges made and services rendered
for apples hauled by rail and truck.

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Influence of nitrogen level on the rate of ripening and
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substances. Amer. Soc. Hort. Sci. Proc. 63, pp. 225-233,
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81 S012

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Color changes in skin and flesh of stored McIntosh apples
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81 S012

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Storing apples in perforated plastic bags. Minn. Hort.
82 (10), p. 147, printed. Nov.
81 M66

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quality of Minnesota apples.

271. WRIGHT, T.R., and SMITH, E.

Relation of bruising and other factors to blue mold decay
of Delicious apples. USDA C.935, 15 pp., printed.
1 Ag84C

Effects of maturity and ripeness during storage on
bruising; effects of bruising, maturity, ripeness
during storage, and time of inoculation after bruising
on infection; effects of maturity, ripeness during
storage, cooling rate, and storage temperature on
decay development after infection.

272. BERE, R. L., and CRAVENS, M. E.

Labor and material costs and machinery investment in apple grading and packing, 30 Ohio apple growers, 1954-1955. Ohio Agr. Expt. Sta. A.E. 256, 19 pp., mimeo. Aug. 281.9 Oh32

Also in: Pre-Pack-Age 9(4), Dec. 1955, pp. 16-21.

Grading and packing costs, material cost, total cost of labor and material, type of prepackaging operation, grading and packaging machinery investment, and effect of size of operation on packing cost.

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Direct labor and material costs in retail apple merchandising and actions of customers in purchasing apples, Columbus, Ohio, 1955. Ohio Agr. Expt. Sta. A.E. 257, 13 pp., mimeo. Oct.

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A study of hydrocooling apple fruits. Cornell U. M.S. Thesis, Cornell U. Library.

275. CARLSEN, E. W., and OTHERS.

Innovations in apple handling methods and equipment. USDA Mktg. Res. Rpt. 68, 89 pp., printed. Jan.

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Duerden, R.S., Hunter, D.L., and Herrick, J.F., joint authors.

Includes discussion of gravity-type roller conveyors installed on warehouse platforms and road truck beds for receiving 36-box pallet loads, fork-lift truck-trailer trains for transporting apples between storage points and the packing line, tractor-trailer trains for transporting apples between storage points and the packing line, 24-box industrial clamp-type lift trucks for handling apples in plants using belt conveyors and hand trucks, 12-box industrial clamp-type truck for moving apples from storage to the packing line and for loading refrigerator cars, and other handling innovations.

276. CRANDALL, P. C.

Relation of preharvest sprays of maleic hydrazide to the storage life of Delicious apples (in Washington State).

Amer. Soc. Hort. Sci. Proc. 65, pp. 71-74, printed. June. 81 S012

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Marketing Appalachian apples. W. Virginia Agr. Expt. Sta.
B. 372, 7 pp., printed. Mar.
100 W52
Costs of marketing Appalachian apples, including packing costs, container costs, and storage and selling costs, and effect of quality on costs and returns.

279. FRANCIS, F. J., HARNEY, P. M., and BULSTRODE, P. C.
Color and pigment changes in the flesh of McIntosh apples after removal from storage. Amer. Soc. Hort. Sci. Proc. 65, pp. 211-213, printed.
81 So12

280. FRENCH, B. C.
The long term price and production outlook for the U. S. and Michigan. Mich. Agr. Expt. Sta. Tech. B. 255, 36 pp., printed. April.
100 M58S

281. GAVETT, E. E.
A study of developing master containers for transporting prepackaged Maine McIntosh apples. U. Maine M.S. Thesis, U. Maine Library. June.

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Use of film box liners to extend storage life of pears and apples. USDA C. 965, 28 pp., printed. April.
1 Ag84C

283. GERHARDT, F., and Siegelman, H. W.
Storage of pears and apples in the presence of ripened fruit. J. Agr. and Food Chem. 3 (5), pp. 428-433, printed. May.
381 J8223
Effects of emanations from ripe fruit in storage on the storage life of apples and pears.

284. GRAY, H. E., and SMOCK, R. M.
Farm refrigerated apple storages. N. Y. (Cornell) Agr.
Ext. B. 786, rev., 61 pp., printed. July.
275.29 N48E

285. HARRIS, R. D., and LEE, W. A.
Effects of methods of packaging apples on costs and returns
to Pennsylvania growers, 1954. Penn. Agr. Expt. Sta. Prog.
Rpt. 141, 6 pp., printed. Oct.
100 P381P
Variables affecting costs and returns, labor requirements
in packing apples, wages for apple packing, labor
costs, packaging material costs, total variable packing
costs, machine versus hand bagging, labor costs with
machine bagging, fixed costs of bagging machines, and
most profitable machine baggers for various outputs.

286. HENDERSON, P. L.
Merchandising apples; the effect of advertising and point
of sales ads. on apple sales (in Virginia). Va. Fruit
43 (6), pp. 30, 32, 34, printed. June.
81 V81B

287. HOUSEMAN, E. E.
Measurement of sales of apples in retail stores. Agr. Econ.
Res. 7 (2), pp. 33-41, printed. April.
1 EC7Ag
Measurement of changes in volume of retail sales and
measurement of effects of merchandising practices on sales.

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Cutting costs in apple packing. USDA Mktg. Activ. 18 (3),
pp. 3-6, printed. March.
1.942 A8M34
Development of new equipment for apple packing plants,
how it operates, and its effect on cost of packing.

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An economic analysis of apple marketing, Hondo Valley,
New Mexico. U. Minn. Ph.D. Thesis, 111 pp., U. Minn. Library,
Abstract in Diss. Abstract 15 (11-12), p. 1948. Nov.
241.8 M58
A comparison of marketing methods for apples in Hondo
Valley, New Mexico.

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Prepackaging apples in film bags. Mich. Agr. Expt. Sta.
Spec. B. 396, 19 pp., printed. Feb.
100 M58S
Comparison of Michigan bagging operations, bagging
methods used, bagging equipment used, space require-
ments, and efficiency in bagging.

291. LOTT, R. V., and RICE, R.
Effect of preharvest sprays of 2,4,5-trichlorophenoxy-
propionic acid on the maturation of fruits of important
summer-maturing apple varieties. Ill. Agr. Expt. Sta. B. 588,
31 pp., printed. June.
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Effect of preharvest sprays of 2,4,5-trichlorophenoxy-
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and Golden Delicious apples. Ill. Agr. Expt. Sta. B. 589,
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Factors affecting incidence of superficial scald in the
Rome Beauty apple and its coloured sport, Frimley Beauty.
New Zeal. J. Sci. and Technol. A, Agr. Res. Sect. 37 (4),
pp. 312-317, printed. Dec.
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Effects of time of picking, delay between harvest and
cool storage, and oil wrappers on superficial scald in
Rome Beauty and Frimley Beauty apples.

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The effect of temperature near 32 degrees F on the storage
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81 S012

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or jobbers. Also includes operation of commercial repackers,
including volume sold on fresh market, types and sizes of
packages, varieties, grades and sizes packaged, costs of
packaging, types of outlets used, and advantages and dis-
advantages of packing apples.

297. RYALL, A. L., and UOTA, M.
Effects of sealed polyethylene box liners on the storage
life of Watsonville Yellow Newtown apples (in California).
Amer. Soc. Hort. Sci. Proc. 65, pp. 203-210, printed. June.
81 S012

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Apple profits from McIntosh and other varieties. N. Y.
(Cornell) Agr. Col. Farm Econ. 199, pp. 5272-5274, printed. Mar.
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Consumer purchases of apples in 1953. Mich. Agr. Expt. Sta.
Spec. B. 405, 28 pp., printed. Dec.
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Merchandising studies in supermarkets-apples, lettuce, and
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AMS-18, 9 pp., mimeo. Mar.
A280.39 M34AM
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Apples volatiles and their significance at storage temperatures.
Amer. Soc. Hort. Sci. Proc. 66, pp. 111-117 printed. Dec.
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Effect of ripe apple vapors in apple storage and an
evaluation of air purification by various means at cold
storage temperatures.

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Storage of apples in perforated plastic bags.
Pre-Pack-Age 8 (7), pp. 16-17. printed. Mar.
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bags.

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Some changes in Eastern apples during storage. U.S.D.A.
Tech. B. 1120, 54 pp., printed. June.
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eastern apples during storage.

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Merchandising apples in large and small stores.
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280.8 C812

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A statistical analysis of apple supply and demand.
Pa. Agr. Expt. Sta., A.E. and R.S. 2, 23 pp., mimeo, Jan.
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306. DALRYMPLE, D. G.
Merchandising prepackaged apples. N. Y. (Cornell)
Agr. Expt. Sta., A.E. 1027, 5 pp., mimeo. Apr.
281.9 C81
Also in: Va. Fruit 44 (5), May 1956, pp. 38, 40, 42, 43,
and Pre-Pack-Age 10 (1), Sept. 1956, pp. 18-19, 22.
Methods of merchandising apples and their effect on
apple sales in New York.

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Marketing controlled - atmosphere apples, N. Y. (Cornell)
Agr. Expt. Sta., A.E. 1028, 59 pp., mimeo. June.
281.9 C81
Controlled atmosphere storage operations, quality of
apples at retail level, financial returns to growers,
problems with CA storage, and merchandising CA stored
apples.

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Estimates of apples shipments by type of container, marketing
channel, and producing district. Mich. Agr. Expt. Sta. Q.
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The long-term price and production outlook for apples in
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with an interpretation of the projections.

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Cooling apples before storage - two methods studied.
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Handling apples in bulk boxes. Mich. Agr. Expt. Sta. Spec.
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Polyethylene film box liners for reducing weight losses and shriveling of Golden Delicious apples in storage. Amer. Soc. Hort. Sci. Proc. 67, pp. 82-90, printed. June.
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Weekly changes in movement of apples, selected markets, 1955-56 marketing season through Dec. 31, 1955, U.S. Agr. Mktg. Serv., AMS-91, 35 pp., mimeo. Feb.
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Smith, H. J., McMullin L. D., and Grubbs, V. D., joint authors.
Statistical data on apple movements for selected markets.

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The effect of apple handling methods on storage space utilization. U.S.D.A. Mktg. Res. Rpt. 130, 18 pp., printed. July.
1Ag 84Mr
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100 UT1F
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Which apple marketing outlet is best? N. J. State Hort. Soc. Hort. News 37, pp. 3032, 3033, printed. Mar.
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Factors affecting choice of market outlet in New Jersey.

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Three-team method of picking apples. Mich. Agr. Expt. Sta. Q.B. 38 (4), pp. 595-605, printed. May.
100 M58S
An apple harvesting method, its efficiency, and its advantages and disadvantages.

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Consumer packages for Maine apples. Maine Agr. Expt. Sta. B. 553, 20 pp., printed. Dec.
100 M28S
Gavett, E. E., Underwood, J. W., and McDonald, F. J., joint authors.
Primarily effect of consumer packages on bruising or quality of apples.

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A theoretical relationship of the variables affecting the operation of controlled atmosphere storage rooms. Mich. Agr. Expt. Sta. Q. B. 39 (2), pp. 353-359, printed. Nov.
100 M58S

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Consumer packages for Northeastern apples. N.Y. (Cornell) Agr. Col. Farm Econ. 206, pp. 5452-5454, printed. Oct.
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Packaging apples at country points in film or mesh bags and in gift packages, 1954-55 season. N.Y. (Cornell) Agr. Expt. Sta., A.E. 1038, 61 pp., mimeo. Aug.
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Comparative acceptance of packaged versus conventionally stored Stayman and Rome Beauty Apples. Pa. Agr. Expt. Sta. Prog. Rpt. 154, 2 pp., printed. Aug.
100 P381P
Effects on quality of packaging prior to storage.

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Storage scald control by orchard applications of mineral oil.
Amer. Soc. Hort. Sci. Proc. 67, pp. 80-81 printed.
81 S012

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Pomologists study new controls for apple scald disease.
N. Y. (Cornell) Agr. Col. Farm Res. 22 (3), p. 16, printed.
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Summary of research on bruise prevention and quality. Fruit
Industries Research Foundation, Yakima, Wash., and Wash. State
Apple Commission, Wenatchee, Wash., 22 pp., mimeo.

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Effects of bagging apples on quality (of apples). N. Y.
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The effect of cooling rate on the market quality of McIntosh
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Measurement of rate of movement of apples into consumption
using the retail store customer observation method. Cornell
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Consumer packages for Pacific Northwest medium and large size
apples (a progress report, 1956-57).
Fruit Indus. Res. Found., Yakima, Wash., and Wash. State Apple
Commission, Wenatchee, Wash., 8 pp., mimeo. July.

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A tent for the controlled-atmosphere storage of apples.
Mich. Agr. Expt. Sta. Q.B. 40 (1), pp. 181-192, printed. Aug.
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The future of controlled atmosphere apples storage. N. Y. State
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Progress report on the controlled-atmosphere storage of
Jonathan apples. Mich. Agr. Exp. Sta. Q.B. 39 (4), pp. 691-700,
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apples.

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Economics of apple production in North America. Nova Scotia Fruit Growers' Assoc. Annu. Rpt. 9^{1/2}, pp. 51-53, 55-59, 61-64, printed.

82 N85

Production of apples by countries, costs and returns from apples in U.S.A., and effects of merchandising practices on apples sales in U.S.A.

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Competition and apple prices (with emphasis on processors in the Appalachian areas). W. Va. Ag. Expt. Sta. B. 406, 18 pp., printed. June.

100 W52

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Apple color -- its development and sales appeal. W. Va. Agr. Expt. Sta. B. 396, 7 pp., printed. Mar.

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Competition for New England apples on United States markets.

I. Market prospects for growers. N. H. Agr. Expt. Sta.

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Equipment and layout for fruit packing houses. Mich. Agr.

Expt. Sta. Spec. B. 417, 28 pp., printed. July.

100 M58S

Advantages of on-the-farm packing facilities, cost of packing house building and equipment, location, design, equipment for handling, grading, and packing, and operation of packing house.

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Handling apples in bulk boxes. N.J. Hort. Soc. News 38 (1),

pp. 3105, 3112, printed. Jan.

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Advantages and disadvantages of using bulk boxes.

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Costs of packing apples in Michigan. Mich. Agr. Expt. Sta.
Q. B. 40 (2), pp. 286-299, printed. Nov.
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of equipment and scale of operations. Virginia Polytechnic
Institute, M.S. Thesis, V.P.I. Library. May.

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Effects of polyethylene box liners on scald, firmness, weight
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81 S012

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and factors associated with the movement of apples in retail
food stores. Va. Agr. Expt. Sta. Tech. B. 129, 74 pp., printed.
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26 pp., printed. Feb.
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at retail in Philadelphia and at wholesale in Philadelphia,
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season.

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Apple production costs and returns, selected Utah areas.
Utah Agr. Expt. Sta. B. 403, 20 pp., printed. Nov.
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A bulk box dumper for handling fruit. Mich. Agr. Expt. Sta.
Q. B. 39 (4), pp. 557-562, printed. May.
100 M58S
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The quality and keepability of Golden Delicious apples having russet bands caused by frost. Amer. Soc. Hort. Sci. Proc. 69, pp. 56-64, printed. June.
81 SO12

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Apple packing and equipment requirements of Maine growers and packers - summary of mail questionnaire. Maine Pomological Service, Maine Dept. of Agr., and Maine Agr. Expt. Sta. 13 pp., mimeo, Jan.

Apple production of selected Maine producers, quantity of apples packed, number of size and grades packed capacity of storage facilities packing equipment of growers, size of packing house, and major problems.

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Apple marketing study for 1957. Maine Agr. Expt. Sta. Preliminary report, 14 pp., mimeo, Apr.

Effects of prepackaging on bruising of apples in transit costs of prepackaging and consumer preference for packaged apples.

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Absorber for the removal of carbon dioxide from controlled-atmosphere storage of apples. Mich. Agr. Exp. Sta. Q.B. 40 (1), pp. 139-146, printed. Aug.
100 M58S

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An experimental tilt-up concrete building for the controlled-atmosphere storage of apples. Mich. Agr. Exp. Sta. Q.B. 39 (3), pp. 505-510, printed. Feb.
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Bruising of apples: Where does it occur and how can it be minimized? Wash. State Hort. Assoc. Proc., 53, pp. 129-131, printed.
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Controlled-atmosphere storage of Starkling Delicious apples in the Pacific Northwest. U. S. Agr. Mktg. Service, AMS-178, 14 pp., printed. Mar.
Effect of controlled atmosphere storage on the storage life of Pacific Northwest Starkling Delicious apples and on the dessert quality of apples.

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New treatment for storage scald of apples. R. I. Agr. 4 (1), pp. 4-5, printed.
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A comparison of treatments for control of the apple scald disease. Amer. Soc. Hort. Sci. Proc. 69, pp. 91-100, printed. June.
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A study of the effect of gamma radiation on apples. Amer. Soc. Hort. Sci. Proc. 70, pp. 67-69, printed. Dec.
81 S012
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Apple cool storage investigations in 1955. Queensland J. Agr. Sci. 14 (3), pp. 167-181, printed. Sept.
23 Q37
Quality of apples in storage.

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Apple varieties for Oregon. Oregon Agr. Expt. Sta. B. 563, 30 pp., printed.
100 OR3

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381 J8223

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Labor utilization in apple packing sheds in Virginia. Va. Agr. Expt. Sta. B 493, 50 pp., printed. June.
100 V81S

Labor requirements for various operations and methods in packinghouses and efficiency of labor.

364. DEWEY, D.H.

Grade defects of controlled-atmosphere apples and their effect on storage returns. Mich. Agr. Expt. Sta. Q.B. 41 (1), pp. 122-129, printed
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Effects of orchard fungicides on stored McIntosh apples. Canad. J. Plant Sci. 38 (2), pp. 246-251, printed. April.
450 C16

Effects of phenyl mercuric acetate, captan, glyodin, sulphur paste, and ferbam fungicides on the storage quality of McIntosh apples in Canada.

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Does the method of stowage in storage affect keeping quality of apples? Maine Farm Res. 5 (4), pp. 25-27, printed. Jan.
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W. Va. Agr. Expt. Sta. B. 416, 26 pp., printed. June
100 W52
Packing and handling costs, including labor, overhead,
container, receiving, and loading-out costs; and me-
chanical injury; including injury on arrival at pack-
ing house, mechanical dumping versus hand dumping,
injury from elevator chains and sorting rolls, sizing
machine damage, and packing damage from the take-off
areas.

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Determination of diphenylamine residue on apples. New
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Handling and storage of apples in pallet boxes; an inter-
im report. US Agr. Mktg. Serv., AMS-236, 41 pp., printed.
Apr.
A 280.39 M34AM
Types of pallet boxes studied, cooling studies with
pallet boxes, amount of bruising, pallet box per-
formance and breakage, comparative costs of different
methods of handling pallet boxes, evaluation of present
pallet boxes, and suggestions for improving pallet box
construction and design.

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Apple sorting methods and equipment. USDA Mktg. Res. Rpt.
230, 24 pp., printed. Aug.
1 Ag84Mr.
Use of conveyor-belt table, spiral-roll table, and
reverse-roll table in sorting; factors affecting sort-
ing efficiency; comparative efficiency of three types
of sorting tables; devices and techniques to improve
sorting, adapting improvements to other sorting tables;
new float-roll sorting table; and comparative costs
of float-roll table and other tables.

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The organization for the apple marketing in Niigata District.
(In Japanese with English summary). Tohoku Natl. Agr. Expt.
Sta. B. 14, pp. 141-148, printed. Sept.
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Cooperative marketing of apples in Japan.

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The effect of storing apples in polyethylene box liners on the development of bull's-eye rot, caused by *Neofabraea Perennans*. Plant Disease Rptr. 42 (1), pp. 97-99, mimeo. Jan.

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The bulk bin method of handling fruit. I. Cooling and bruising of McIntosh apples. Canada. J. Plant Sci. 38 (4), pp. 440-444, printed. Oct.

450 C16

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Comparative costs of handling apples at packing and storage plants. USDA Mktg. Res. Rpt. 215, 75 pp., printed. Mar. 1 Ag84Mr.

Labor requirements and total costs of handling apples in different size storage and packing houses and comparison of costs for handling different volumes of apples by use of five types of equipment.

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Improving methods of packing apples in consumer packs.

Pa. Agr. Expt. Sta. B. 639, 21 pp., printed. Dec.

100 P381

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Comparison of efficiency in packing apples in consumer packs using various methods.

376. PERKINS, F.A.

Reducing injuries to poly-packed Maine McIntosh apples.

Maine Farm Res. 6 (3), pp. 12-13, printed. Oct.

100 M28Ma

Effects of methods of handling prepackaged apples on quality of the fruit.

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A new injury on McIntosh apples out of controlled atmosphere storage. Maine Farm Res. 6 (2), pp. 12-13, printed.

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Forecasting bull's-eye rots in Northwest-grown apples in storage. Plant Disease Rptr. 42 (12), pp. 1394-1396, mimeo. Dec.
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Controlled-atmosphere storage of apples. N. Y. (Cornell) Agr. Ext. B. 759, rev., 35 pp., printed. May.
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Operation of controlled atmosphere storages, handling fruit prior to storage, fruit disorders in CA storage, construction of a CA storage, costs of a CA storage and advantages and disadvantages of CA storage.

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The storage of apples. N. Y. (Cornell) Agr. Ext. B. 440, rev. 40 pp., printed. May.
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Comparison of controlled atmosphere storage and film liners for the storage of apples. Amer. Soc. Hort. Sci. Proc. 71, pp. 36-44, printed.
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A method of reducing the losses caused by *Gioeosporium* app. in stored apples. Nature [London] 181 (4623), pp. 1603-1604, printed, June.
472 N21

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Effect of several respiratory inhibitors on apples. Amer. Soc. Hort. Sci. Proc. 71, pp. 26-31, printed.
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Internal atmosphere movement in CA apple storage. Agr. Engin. 39, pp. 288-289, printed, May.
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A practical means of reducing storage rots of apple and post-harvest rots of peach. W. Va. Agr. Expt. Sta. Cur. Rpt. 22, 12 pp., printed. July
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Apple packing methods in New York State. New York State Hort. Soc. Proc. 104, pp. 193-198, printed
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Storage quality of Jonathan apples in relation to the nutrient levels of the leaves and fruit. Mich. Agr. Expt. Sta. Q.B. 41 (4), pp. 820-833, printed. May
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An experimental packing line for McIntosh apples; an interim report. US Agr. Mktg. Serv., AMS-330, 28 pp., printed. Aug.
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A brief review of selected studies of apple prices. Ohio Agr. Expt. Sta., A.E. 303, 16 pp., printed. March
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